

# EUROPEAN PATENT OFFICE

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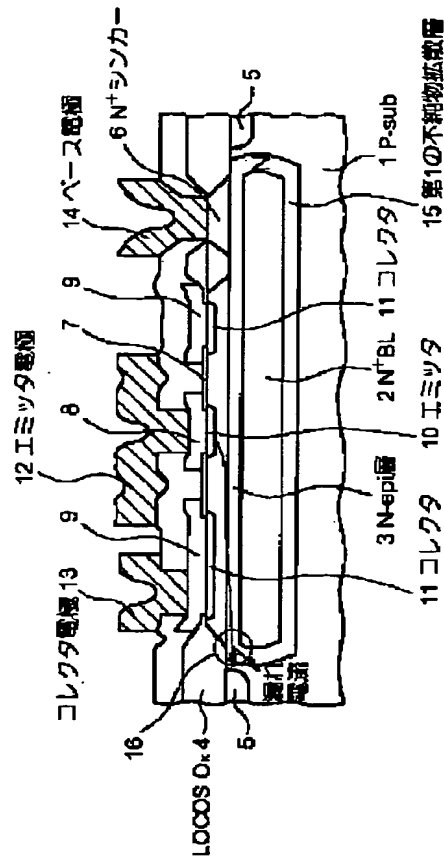
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TITLE : SEMICONDUCTOR DEVICE AND ITS  
MANUFACTURE



ABSTRACT : PROBLEM TO BE SOLVED: To reduce leakage current caused by a parasitic transistor and, at the same time, to improve the emitter current utilization efficiency of a horizontal PNP bipolar transistor in a semiconductor device having the transistor.

SOLUTION: After an N+ embedded layer 2 and a first impurity diffusion layer 15 are formed in a silicon substrate (P-sub) 1, the impurity contained in the layer 15 is diffused into an N-epi layer 3 overlaying the layer 15 through heat treatment and, at the same time, brought into contact with the bottom of the LOCOS Ox 4 of an element separating film. In addition, an N+ sinker layer 6 which is connected to the first impurity diffusion layer 15 through a base, a collector diffusion layer, and the N-epi layer 3 is formed on the N-epi layer 3. Therefore, the occurrence of leakage currents can be reduced and, at the time, the emitter current utilization efficiency of a horizontal PNP bipolar transistor can be improved by eliminating the parasitic transistor structure resulting from the structure of the bipolar transistor.

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